

Evaluation of Analgesic Effectivity of Infra Orbital Nerve Block in Open Septorhinoplasty Surgery: A Retrospective Study

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Abstract: The effect of local anesthesia for pain characteristics is still a challenge for septorhinoplasty surgery. The aim of this study is to demonstrate the clinical benefit of infraorbital nerve block for open septorhinoplasty. After ethical board approval, 60 patient saged 18-45 years, ASA group I-II were randomly assigned two groups; Group B received 15 mg bupivacaine hydrochloride to infraorbital foramen for each side. Group C did not received any local anesthesia. Data from patient files on postoperative 12-hour pain scores (Visual Analog Scales) and analgesic consumption of the patients were analyzed. Group B had lower pain scores at 1 hour postoperatively compared to group C. It was observed that the effective postoperative analgesia continued consistently at the 6th and 12th hours in the patients in group B. At the same time, the need for IV analgesics at the postoperative 12 hours was significantly lower in group B compared to group C. Intraoperative infraorbital regional bupivacaine anesthesia is an effective procedure that reduces postoperative pain levels in septorhinoplasty operations. © 2022 NTMS.

Keywords: Septorhinoplasty; Pain Control; Bupivacaine; Regional Anesthesia.

1. Introduction

Septorhinoplasty is one of the operations performed quite often by ear nose throat and plastic surgery specialists. If adequate analgesia is not provided due to bone manipulation and periosteal irritation in septorhinoplasty surgery, the postoperative period can be quite painful for the patient (1).

Postoperative pain is acute inflammatory pain. It begins with surgery trauma and ends with tissue healing. In combination with catecholamine discharge, pain can lead to cardiovascular events, neuroendocrine or metabolically undesirable changes, thromboembolic events, pulmonary complications, and prolonged hospitalization (2).

Successful analgesia management increases patient comfort and shortens hospital stay length (3).

Important research and clinical observations show that local anesthesia can reduce pain in nose surgery (4, 5). The application of local anesthesia in combination with general anesthesia is widely used in head and neck surgery. In particular, infraorbital nerve block anesthesia added to general anesthesia can provide excellent pain control during and after surgery in septorhinoplasty surgery (6). Infraorbital nerve block and other peripheral nerve blocks have advantages such as reducing tissue edema in the operation area, widening the anesthesia area and reducing pain due to infiltration anesthesia (7). The infraorbital nerve can

be easily block eddue to its constant association with the infraorbital foramen, an easily palpable bony landmark (8).

In this study, the effect of intraoperative infra orbital nerve block anesthesia on postoperative analgesia have been evaluated retrospectively in patients who underwent open septorhinoplasty.

2. Material and Methods

Approval was obtained from the ethics committee of Training and Research Hospital in eastern of Turkey. This retrospective study includes data from hospital management software and patient documentations files, which includes the postoperative 12-hour pain scores and analgesic consumption of 60 (33 Female, 27 Male) participants aged 18-45 years who underwent open septorhinoplasty, group I-II of the American Society of Anesthesiologists (ASA), and was conducted between 01.11.2021 and 30.06.2022.

Individuals with a known chronic disease, a history of gastrointestinal bleeding, a known allergy to bupivacaine, drug addiction, and pregnant women were excluded from the study.

Anesthesia induction was performed in the same way for all participants. During anesthesia induction, approximately 2.5–3.5 mg/kg propofol, 0.6 mg/kg rocuronium, and 50 mcg fentanyl were administered. Anesthesia was maintained with sevoflurane in a 40-60 % O₂-air mixture with minimal age-adjusted alveolar concentration (MAC). Remifentanyl was administered as an intraoperative analgesic at 0.125 µg/kg/min. Approximately 30 minutes before the end of the operation, a 2 mg/kg tramadol loading was performed. At the end of the operation, a single dose of 40 mg esomeprazole was administered intravenously. The patients were divided into two groups;

The control group [Group C, n:30 (17 Female, 13 Male)] included 17 female and 13 male participants who underwent open septorhinoplasty and were not given infra-orbital regional anesthesia.

In the bupivacaine group [Group B, n=30 (16 Female, 14 Men)], patients who underwent open septorhinoplasty and were administered intraoperatively 3 mL (15 mg) bupivacaine hydrochloride regional anesthesia to both infraorbital foramen were included.

Paindegrees of thepatientswereevaluatedwiththe Visual Analog Scale (VAS) at 1.6.12 hourspostoperatively. A 1 g paracetamol (Parol; Atabay Turkey®) flacon was administered to the patients for post operative pain control. And IV 50 mg dexketoprofenmetamol (Arvels) ampoule was administered to the patients as “rescue” analgesia.

2.1. Infra-Orbital Nerve Block Technique

After induction of anesthesia and tracheal intubation, a infra orbital nerve block procedure was performed. The index finger was placed in the infra-orbitalforamen. A 10 mL syringe with a 25 gauge and

2.54 cm needle was inserted through the fossa canine 1 cm outside the nostril. The needle tip was advanced towards the infraorbital foramen. Appropriate needle placement was confirmed when the needle tip was palpated close to the infraorbital foramen, and no blood was drawn in the aspiration (9). Then, 3 cc 0.5 % bupivacaine hydrochloride (Marcaine; Aztrezeneca, Turkey®) was injected, and the swelling was palpated. The same procedure was performed for the contralateral side (10).

2.1. Statistical Analyses

SPSS 18.0 statistical package program (SPSS Inc.; Chicago, IL, USA) was used in the analysis of the data. For the descriptive data in statistical analysis, Kolmogorov–Smirnov was used for the number, mean, ±standard deviation, compatibility of the groups to a normal distribution, Kruskal-Wallis was used. Gender distribution of B and C groups was evaluated with chisquare test. Student’s t test was used to compare normally distributed continuous variables. For distributions other than normal, a Mann-Whitney U test was applied. A p level of <0.05 was accepted as statistically significant.

3. Results

The ASA and demographic variables of the cases in Group B (study group with bupivacaine infra orbital nerve block) and Group C (control group without infra orbital nerve block) are similar to each other (Table 1).

Table 1: Demographic variables of patients and ASA.

	Group B n:30	Group C n:30	P
Gender (Female/Male)	16/14	17/13	0.576
ASA (I/II)	18/12	20/10	0.482
Age (Years)	30.5 ± 4.8	32.1 ± 5.3	0.524

ASA: American Society of Anesthesiologist values are given as number or Mean±SD.

The comparison of VAS scores in the first 12 hours postoperatively between group B and group C is shown in Table 2.

Table 2. Visual Analog Scale (VAS) painscores at 1, 6 and 12 h post surgery in 60 patients.

VAS Scores	Group B (n=30)	Group B (n=30)	P
1 h Post Surgery	2.22 ± 1.03	4.8 ± 0.71	0.0012
6 h Post Surgery	2.05 ± 0.83	4.3 ± 0.58	0.0015
12 h Post Surgery	2.01 ± 0.42	3.7 ± 0.67	0.0138

Values are expressed Mean ± SD, h; hour.

In group B, compared to group C, VAS decreased significantly at the postoperative 1st hour, and

adequate postoperative analgesia was consistently maintained at the 6th and 12th hours. The rate of consumption of IV analgesics during the postoperative 12 hours is shown in table 3 for both groups. The need for IV analgesics was significantly lower in group B compared to group C, 21 and 11 patients, respectively, needed postoperative analgesic drug use (p:0.013).

Table3. Requirement for post-surgical analgesics in 60 patients.

Analgesic Drug Consumption	Group (n=30)	Group C (n=30)
Nil Additional Analgesic I.V Analgesic Requirement	19	9
Parasetamol 1 gr		
1 Flacon	7	10
2 Flacon	3	7
Deksketoprofen		
Trometamol 50 mg		
1 Flacon	1	4

In summary, bupivacaine infra orbital nerve block provides effective analgesia in postoperative 12 hours and significantly reduces analgesic consumption.

4. Discussion

Our results show that intra operative infraorbital nerve block with bupivacaine provides significant analgesic effect in the first 12 hours postoperatively and reduces the need for analgesic medication.

Patients complain of severe pain in the postoperative period after septorhinoplasty operations (11). In addition, the area of the operation is also rich in sensitive nerves, so much so that the pain may be more pronounced due to compression caused by leaks and blockages (1).

An effective analgesic treatment is necessary to prevent pain and pain-related morbidities and to reduce the length of hospital stay. For this reason, many analgesic drugs or interventions are administered to patients before, during, or after the operation (12).

Preoperative administration of certain analgesic drugs (preemptive analgesia) facilitates pain control by blocking central sensitization in the postoperative period (3). In the literature, there are studies showing the effectiveness of different groups of drugs (tramadol, ibuprofen, levobupivacaine, etc.) applied systemically and locally as preemptive analgesics (2, 3).

The nasal branches of the infraorbital nerve (V2 branch of the trigeminal nerve) innervate the outer nasal walls and the nasal septum (13). Therefore, local anesthesia of the infraorbital nerve provides anesthesia in the nasal structures. This procedure has a potential analgesic effect and minimal risk.

Edward R. et al., in their study, reported that intraoperative bilateral infraorbital block, added to

standard general anesthesia in nasal surgery, is useful in pain management in the postoperative period (10).

Cekic et al., reported that infraorbital nerve block, created by adding 50 mg of tramadol to 0.25 % levobupivacaine, provides effective postoperative analgesia in patients under going outpatient nasal surgery (14).

Higashizawa et al. Reported that infraorbital nerve block with 0.25 % bupivacaine in endoscopic sinus surgery under general anesthesia reduces the consumption of inhaled anesthetic as it reduces the intraoperative pain stimulus (15).

Demiraran et al. (16) reported that local injection with levobupivacaine in nasal surgery compared with 0.25 % lidocaine +2 % epinephrine 1/100,000 in patients who received levobupivacaine infiltration significantly decreased VAS scores with analgesic consumption in the postoperative period. In parallel with this study, Yılmaz et al. reported that local injection with levobupivacaine in patients who underwent septoplasty significantly reduced VAS scores in the first 4 hours postoperatively compared to local injection with lidocaine (17).

5. Conclusions

In our study, we observed that intraoperative bupivacaine infraorbital nerve block provided statistically significant benefit in pain control in the postoperative period in septorhinoplasty operations, and the need for analgesic agents decreased in the first 12 hours. Intraoperative bupivacaine infraorbital nerve block application is an effective procedure to reduce postoperative pain levels in septorhinoplasty operations, easy to perform.

Limitations of the Study

It is our limitations that it is a retrospective study, the number of cases is low.

Conflict of Interests

The authors declare no conflict of interest.

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Author Contributions

Efe Atila N. contributed to the creation of the research idea, statistical analysis and article writing. Ateş İ. Data collection contributed to interpretation.

Ethical Approval

The study was approved by Erzurum BEAH KAEEK with the decision numbered 2022/11-127.

Data sharing statement

None.

Informed Consent

None.

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